

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. Applicants thank the Examiner for total consideration given the present application. Claims 1-17 were pending prior to the Office Action. No claims have been added through this reply. Claim 13 has been canceled without prejudice or disclaimer of the subject matter included therein. Therefore, claims 1-12 and 14-17 are pending. Claims 1-3 and 5-11 have been withdrawn by the Examiner. Claims 1-5, 7, 9, and 11-12 are independent. Claims 4, 12, and 14-17 are pending before the Examiner. Applicants respectfully request reconsideration of the rejected claims in light of the remarks presented herein, and earnestly seeks a timely allowance of all pending claims.

Claim Rejections - 35 U.S.C. § 102(b) / 35 U.S.C. § 103(a)

Claims 12 and 14-17 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by Miyazaki et al. (U.S. Patent 5,969,784).

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Cho et al. (U.S. Patent Publication 2004/0114087) in view of Murouchi (U.S. Patent 6,067,144).

Claim 13 was rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Miyazaki in view of Kijima et al. (U.S. Patent 6,259,500).

Applicants respectfully traverse these rejections.

For a Section 102 rejection to be proper, the cited reference must teach or suggest each and every claimed element. *See M.P.E.P. 2131; M.P.E.P. 706.02*. Thus, if the cited reference fails to teach or suggest one or more elements, then the rejection is improper and must be withdrawn.

For a Section 103 rejection to be proper, a *prima facie* case of obviousness must be established. *See M.P.E.P. 2142*. One requirement to establish a *prima facie* case of obviousness is that the prior art references, when combined, must teach or suggest all claim limitations. *See M.P.E.P. 2142; M.P.E.P. 706.02(j)*. Thus, if the cited references fail to teach or suggest one or more elements, then the rejection is improper and must be withdrawn.

Argument A: Features of claim 4 are not taught by cited prior art:

Independent claim 4 recites, *inter alia*, “the second column spacers having a height and a width, where the height of the second column spacers are 45 percent of the width of the second column spacers, the first column spacers having a height and a width, where the height of the first column spacers are 43 percent of the width of the first column spacers, each of said plurality of second column spacers are arranged at a rate of one spacer per ten picture elements, and each of said plurality of first column spacers are arranged at a rate of one spacer per fifteen picture elements.”

The Examiner relies on Cho for disclosing “each of said plurality of second column spacers are arranged at a rate of one spacer per ten picture elements, and each of said plurality of first column spacers are arranged at a rate of one spacer per fifteen picture elements.” However, the Examiner acknowledges that Cho fails to disclose that each of said plurality of second column spacers are arranged at a rate of one spacer per ten picture elements and each of said plurality of first column spacers are arranged at a rate of one spacer per fifteen picture elements. Therefore, Cho fails to disclose all claimed limitations of claim 4.

Further, the Examiner relies on Murouchi for allegedly disclosing that “the second column spacers having a height and a width, where the height of the second column spacers are 45 percent of the width of the second column spacers, the first column spacers having a height and a width, where the height of the first column spacers are 43 percent of the width of the first column spacers.” However, Murouchi fails to explicitly disclose an explicit value that would provide the height of the first column spacers are 43 percent of the width of the first column spacers and the height of the second column spacers are 43 percent of the width of the second column spacers.

The specification describes the excellent operation and effect can be achieved from the liquid crystal display panel defined in claim 4. (See specification, line 5 of page 23 through line 5 of page 24.) In other words, when first and second columnar spacers are formed under the conditions defined in claim 4, high columnar spacer 29 is compressed with higher priority than low columnar spacer 30, and the compression thereof stops when the height of high columnar spacer 29 becomes equal to that of low columnar spacer 30, and therefore, as shown in Fig. 8A,

the two substrates become parallel. According to the present invention, when a space is filled with the liquid crystal or when load is applied to the liquid crystal display panel, the size of the space filled with the liquid crystal can be effectively adjusted due to the difference in operation between the high columnar spacer and the low columnar spacer. As a result, occurrence of vacuum bubbles and lowering of the display quality can be prevented.

The Examiner asserts that Murouchi discloses, in column 3, lines 7-26, that the height of the second columnar spacers are 45 percent of the width of the second columnar spacers and the height of the first columnar spacers are 43 percent of the width of the first columnar spacers. However, Murouchi only discloses the range of the numerical values of the height that two types of gap supporting members can have as well as several shapes that two types of gap supporting members can take. Murouchi fails to disclose in detail the ratio between the height and the width of each of the first and second columnar spacers as recited in claim 4 of this application. The conditions defined in claim 4 are for effectively adjusting the size of the space filled with the liquid crystal due to the difference in operation between the high columnar spacer and the low columnar spacer.

It cannot be readily derived from Murouchi by those skilled in the art to combine and make effective use of the deformation effect and the deformation suppression effect of two types of spacers. Therefore, the conditions defined in claim 4 are not the conditions at which those skilled in the art can arrive by finding optimum values based on the routine skill in the art.

A requirement to establish a *prima facie* case of obviousness is that there must be a suggestion or motivation within the cited reference(s) to modify the reference(s) as proposed in the Office Action. See M.P.E.P. 2143.01. The claimed invention as a whole must be considered. It is not enough to determine whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. See M.P.E.P. 2141.02.

In this instance, as stated above, the Examiner merely asserts that the claimed features are merely optimum values. In essence the Examiner is arguing that the invention is merely design choice over Cho and Murouchi.

However, the Examiner did not provide any suggestion or motivation within the cited reference of the above mentioned modification and further the cited combination fails to disclose

the features of the claimed apparatus. Therefore, combination of Cho and Murouchi cannot disclose the second column spacers having a height and a width, where the height of the second column spacers are 45 percent of the width of the second column spacers, the first column spacers having a height and a width, where the height of the first column spacers are 43 percent of the width of the first column spacers, each of said plurality of second column spacers are arranged at a rate of one spacer per ten picture elements, and each of said plurality of first column spacers are arranged at a rate of one spacer per fifteen picture elements. And more importantly, Applicants have clearly illustrated above that the benefits of the claimed features and how those claimed features are not merely conditions at which those skilled in the art can arrive by finding optimum values based on the routine skill in the art.

Further, in this instance, it appears that the only motivation to combine has been gleaned from the teachings of this application. This constitutes impermissible hindsight. See MPEP 2141. Simply put, there is no showing in the Office Action that the conclusion of obviousness was reached on the basis of facts gleaned from the prior art, and not from the claimed invention. See MPEP 2143.

Therefore, for at least these reasons, claim 4 is submitted to be allowable over Cho and Murouchi for at least this reason.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claim 4 under 35 U.S.C. § 103(a).

Reconsideration and allowance of claim 4 is respectfully requested for at least these reasons.

Argument B: Features of claim 12 are not taught by Miyazaki:

Independent claim 12 has been amended to include dependent claim 13. More specifically, claim 12 as amended recites, *inter alia*, “said spacer has at least a first spacer portion, and a second spacer portion formed above said first spacer portion, and an upper portion of said first spacer portion has a larger diameter than a bottom of said second spacer portion, and the upper portion of said first spacer portion has a groove surrounding said second spacer portion in a plan view.” *Emphasis added.*

The Examiner asserts that claim 13 is unpatentable by citing "95" in Fig. 11B of Kijima. The Examiner, however, has a false perception of what Kijima discloses. In Fig. 11B of Kijima, an upper surface of a portion corresponding to a first spacer portion in interlayer insulating layer 95 (that will be referred to as "lower portion") is shown as being serrated in a cross-sectional view.

This only shows that the upper surface of the lower portion is rough, not that there is a "groove" surrounding a portion that protrudes in the shape of a plateau in the upper section of interlayer insulating layer 95. The reason why the upper surface of the lower portion of interlayer insulating layer 95 of Kijima is rough in such a manner is that this surface is used to form reflection electrode 19. A process of making a concave/convex structure of the surface where reflection electrode 19 is formed is illustrated in Figs. 5A and 5B of Kijima (col. 12, lines 1-13). This illustration shows that the concavity/convexity on the surface where reflection electrode 19 is formed results from convex portions 14a and 14b provided in advance. A process of making convex portions 14a and 14b is illustrated in Figs. 4B and 6A-6D (line 53 of col. 10 through line 61 of col. 11), and it can be seen that each of convex portions 14a and 14b is a rounded-mountain-shaped member that is circular as seen from above (in particular, col. 11, lines 57-59). Therefore, it is clear that there is no groove in the upper surface shown as having a serrated cross-sectional shape in interlayer insulating layer 95 in Fig. 11B.

Therefore, claim 12 as amended is submitted to be allowable over Miyazaki and Kijima for at least this reason.

Dependent claims are allowable for the reasons set forth above with regards to claim 12 at least based on their dependency on claim 12.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 12 and 14-17 under 35 U.S.C. § 102(b).

Reconsideration and allowance of claims 12 and 14-17 are respectfully requested for at least these reasons.

Conclusion

Therefore, for at least these reasons, all claims are believed to be distinguishable over the combination of Cho, Murouchi, and Kijima, individually or in any combination. It has been shown above that the cited references, individually or in combination, may not be relied upon to show at least these features. Therefore, claims 4, 12, and 14-17 are distinguishable over the cited references.

In view of the above remarks and amendments, it is believed that the pending application is in condition for allowance.

Applicants respectfully request that the pending application be allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Aslan Ettehadieh Reg. No. 62,278 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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